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Avaya DEMONT & BREYER, LLC 100 COMMONS WAY, STE 250 HOLMDEL, NJ 07733			EXAMINER YEN, ERIC L	
			ART UNIT 2626	PAPER NUMBER
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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

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<b>Office Action Summary</b>	<b>Application No.</b> 10/814,081	<b>Applicant(s)</b> CHOU ET AL.	
	<b>Examiner</b> ERIC YEN	<b>Art Unit</b> 2626	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 13 August 2009.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-18 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-18 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)          | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

## **DETAILED ACTION**

### ***Response to Amendment***

1. In response to the Advisory Action mailed 7/28/09, applicant has submitted an amendment and Request for Continued Examination filed 8/13/09.

Claims 1-5, 10, 12, 15-16, and 18, have been amended.

### ***Response to Arguments***

1. Applicant's arguments with respect to claims 1-18 have been considered but are moot in view of the new ground(s) of rejection.

Applicant argues that Segond does not teach joint classification based on application of word information and word class information. However, whatever applicant regards as word information or word class information is not defined in the claims in such a manner that it should be given weight and/or in a manner that prevents the teachings of Segond from reading on the claim language. Benefits and effects of the invention do not have to be met by the prior art and do not require that applicant's exact invention described in the Specification be taught in the prior art in order to reject a claim. Claims are given their broadest reasonable interpretation in view of the Specification without reading the Specification into the claims. Therefore applicant's intended definitions and intended processes that applicant intends to read into the claim language must be claimed.

Segond teaches disambiguating words (where words communicate information based on their meaning and so they constitute "communication[s] that [comprise] at

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least one word), which classifies an ambiguous word based on what the ambiguous word is and contexts that the ambiguous word can belong to. The word itself reads on “word information” because the word itself has multiple meanings in different contexts and limits the scope of the classification to only those contexts that the word itself can possibly belong to. The contexts read on “word class information” because a context contains a set of words that pertain specifically to the context, while excluding other words. Determining that an ambiguous word belongs to a particular context, therefore, “classifies” the word because it determines that the word belongs to the set (i.e., class) of words that occur in the context (Second, “words that occur in a context designated ‘X’...words that occur in context ‘Y’”, col. 6, lines 32-41). This constitutes a “joint classification” because it combines the information of the word itself with the context information that says the word may belong to the context in order to determine that the word belongs to a particular context (i.e., you cannot say the word “star” belongs to an astronomy context instead of a sports context without knowing the word itself [word information], and likewise you cannot determine that the word “star” belongs to a sports context and not an astronomy context without knowing that the words belonging to the astronomy and sports contexts [word class information] include the word “star”).

Therefore, it is not true that Second does not teach or suggest application of word information and class information.

### ***Claim Objections***

2. Claim 10 is objected to because of the following informalities:

Claim 10 recites “the combination of word information and word class information” when no previous combination was claimed. Reciting “based on word information and word class information” does not necessarily imply a combination.

Appropriate correction is required.

***Claim Rejections - 35 USC § 112***

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claims 2-3, 6, 7-9, 12-13, are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

As per Claim 2, "the communication system" has been deleted from claim 1 and so has no antecedent basis. This is a non-trivial lack of antecedent basis because, since applicant deliberately removed communication system from claim 1, it is not clear if applicant still wants to limit the claim scope in Claim 2 to processors in communication systems or if applicant intended to expand the claim scope of the claims to also include stand-alone computers or other completely independent machines.

For the purposes of applying art, the examiner has interpreted “a processor-based device of the communication system” as --a processor-based device--.

Claim 3 recites "a natural language call routing element of the switch routes” which has no antecedent basis. Like in Claim 2, the lack of antecedent basis is not

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trivial because applicant deleted "communication system" from the independent claim and so it is not clear if applicant wants to include communication system components (which may or may not include a switch) in the claim scope. More importantly it is not clear what actually constitutes a switch since switches generally are simple devices used by more advanced devices and do not generally include a "natural language element" as claimed.

For the purposes of applying art, the examiner has interpreted "wherein a natural language call routing element of the switch" as --wherein a natural language call routing element--.

Claim 6 recites "each of the plurality of terms" which is confusing because the plurality of terms were deleted from both Claim 1 and Claim 5 and so it is not clear what a term is.

For the purposes of applying art, the examiner has interpreted "each of the plurality of terms" as --a plurality of terms--.

As per Claims 7-9, "plurality of terms" was deleted from Claim 1 and so it is not clear what "plurality of terms" refers to or what "plurality of terms" is supposed to be.

For the purposes of applying art, the examiner has interpreted "the plurality of terms is" as --a plurality of terms are--.

As per Claim 12, the claim recites "wherein the information gain based term selection" when no previous "information gain based term selection " is claimed. It is not clear how applicant wishes to claim the information gain based term selection (i.e., it is probably employed by the joint classifier as per the other claims, but it is not

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necessarily so since applicant deliberately broadened the scope of the classifier). The information gain based term selection can be its own independent process. Also, "the terms" has no antecedent basis and so is interpreted as --terms--. Also, Claim 12 includes "first communication" when no previous first communication was claimed (i.e., only a communication, and a first communication implies a second communication which does not exist in the claim scope)

For the purposes of applying art the examiner has interpreted "wherein the information gain based term selection" as --performing information gain based term selection—

Claim 13 recites plurality of words when only "at least one word" was claimed in claim 12, and therefore there is a contradiction and it is unclear whether the communication was actually meant to include more than one word or if the communication includes one-word communications as well.

### ***Claim Rejections - 35 USC § 101***

5. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Claims 1, 4-6, 10-14, and 18, are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.

claims 1, 4-6, 10-14, are rejected under 35 U.S.C. 101 as not falling within one of the four statutory categories of invention. Supreme Court precedent<sup>1</sup>[1] and recent Federal Circuit decisions<sup>2</sup>[2] indicate that a statutory "process" under 35 U.S.C. 101 must (1) be tied to another statutory category (such as a particular apparatus), or (2) transform underlying subject matter (such as an article or material) to a different state or thing. While the instant claim(s) recite a series of steps or acts to be performed, the claim(s) neither transform underlying subject matter nor positively tie to another statutory category that accomplishes the claimed method steps, and therefore do not qualify as a statutory process.

The claims are directed to classification processes and calculations that do not require a machine to perform. Even though a human may have greater difficulty than a machine in performing the more complex calculations, they can still be done without the use of a machine. "Joint classifier" is not sufficient to require a machine because a human can just as easily classify a particular word into a word class using word information and word class information. This distinction is further evidence by claim 2 which, as a dependent claim, should narrow the scope of its parent claim, and which states that the classifier is narrowed to a processor-based device. This at least suggests that the joint classifier need not be a processor and consequently need not be a machine. Therefore, the method independent claims and all dependent claims that do not require a machine in its claim scope are non-statutory under In Re Bilski.

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Also, under current procedure, since applicant did not define “machine-readable medium” in the Specification, the machine-readable storage medium of Claim 18 is non-statutory because its current scope includes transitory media including carrier waves and signals. While "article of manufacture" and "storage" suggests a solid tangible medium, to remove any ambiguity the phrase "non-transitory" should be amended into the claims and applicant should point out in the next response precisely where a computer or other non-transitory medium is supported in the Specification (either through inference from mechanical operations, or otherwise).

***Claim Rejections - 35 USC § 102***

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

7. Claims 1, 2, 15-18 are rejected under 35 U.S.C. 102(b) as being anticipated by Segond et al. (US 6,405,162), hereafter Segond.

As per Claims 1, 15, 18, Segond teaches a method, and corresponding apparatus and article of manufacture comprising a machine-readable storage medium containing software code (Figure 4) comprising receiving a communication that comprises at least one word (“input text... word that has more than one sense”, col. 6,

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lines 32-41; where the text containing the words is a communication and the words themselves are "communications comprising at least one word" because they communicate meaning themselves)

classifying the communication by utilizing a joint classifier based on application of word information and word class information ("employ has two syntactic senses", col. 12, lines 19-30; "disambiguate a word", col. 6, lines 29-32; "input text... includes semantically ambiguous word... rule that is applicable to words that occur in a context designated 'X'... applicable to words that occur in context 'Y'", col. 6, lines 32-41; "context information can be obtained... context in which word occurs in input text", col. 6, lines 42-48; "disambiguate... selecting one sense that applies to the instance of the word", col. 5, lines 59-67; "sense... distinct meanings", col. 5, lines 49-52; See Response to Arguments, where the disambiguation [joint classification] is performed by combining information about what the multi-sense ambiguous word is [word information] and the different context rules/information [word class information, where the words that occur in a context X are a class/set of words occurring in the context X] that narrow the number of senses/meanings of the ambiguous word [word information] to the meaning in the specific context [word class information] using the word itself [word information] and the rule [word class information].)

As per Claim 2, Second teaches wherein the joint classifier is implemented at least in part in a processor-based device (Figure 4; where Figure 4; "system...

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processing unit”, col. 8, lines 22-29; where the system is a computer with a CPU/processor that performs the disambiguation result)

As per Claim 16, Second teaches wherein the processor-based device comprises a switch (“Sun workstation... keyboard... mouse”, col. 8, lines 22-29; where whether it is the computer’s power switch, or any combination of keyboard presses or mouse clicks serve to activate a computer function, the computer contains a switch of some sort).

As per Claim 17, Second teaches wherein the processor-based device comprises a processor coupled to a memory (Figure 4; “memory”, col. 8, lines 22-29).

### ***Claim Rejections - 35 USC § 103***

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Second, as applied to Claim 2, above, and further in view of Lee et al. (US 6,925,432), hereafter Lee.

As per Claim 3, Segond fails to teach wherein a natural language call routing element routes the communication to a particular one of a plurality of destination terminals of the system based on a determined category.

Lee teaches wherein a natural language call routing element routes the communication to a particular one of a plurality of destination terminals of the system based on a determined category ("call routing... posing a disambiguating query", col. 2, lines 12-31; "automated natural language based classification system... improved ability to discriminate between alternative classifications", col. 2, lines 55-65; "routes the call to the appropriate one of the New Accounts... Checking Department", col. 8, 7-25; Figure 2; "use of the word 'my' can be used to indicate that the caller wants to know... existing", col. 8, lines 26-49; "voice recognition unit... disambiguation module are capable of routing", col. 8, line 50 – col. 9, line 4; "converted to text... routing module... route the call to one of a plurality of possible destinations... if... generate a set of candidates, but is unable to reduce the set to a single unique destination", col. 9, lines 5-27; where Lee teaches a similar disambiguation system which provides a practical application to disambiguation systems like Segond's [i.e., call routing], and the combination can be made through simple substitution of the automatic disambiguation function in Lee [which determines my checking account refers to an existing account] with the disambiguation process in Segond to achieve the predictable result of a call routing system that disambiguates inputs with multiple meanings. Lee's example of classifying "checking account" based on the word "my" is an example of automatic classification into a determined category [col. 8, lines 26-49]. Also the destinations at

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least obviously are terminals since the system in Figure 2 is implemented mechanically.)

Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to modify Second to include the teaching of Lee of wherein a natural language call routing element routes the communication to a particular one of a plurality of destination terminals of the system based on a determined category, in order to provide a practical and useful application for a disambiguation function, as described by Lee (col. 8, lines 7-49; where routing a call to its proper destination is a useful application of disambiguation function).

10. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Second, as applied to Claim 1, above, and further in view of Sakai et al. (US 7,099,819), hereafter Sakai.

As per Claim 4, Second fails to teach wherein an automatic word class clustering algorithm is utilized to generate the word class information.

Sakai teaches wherein an automatic word class clustering algorithm is utilized to generate the word class information ("category decision rules... each text is classified to a category according to the category decision rule", col. 3, lines 35-50; "automatically creates a new category", col. 6, line 53 – col. 7, line 5; "if a cluster consisting of a large number of texts... new category to which this cluster is classified", col. 6, lines 34-40; "cluster generation unit", col. 6, lines 7-24; where the clustering is automatically

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performed and whose results is used for a new word class, and so it is an automatic word class clustering algorithm and is used to generate new word class [i.e., category] rules/information).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to modify Second to include the teaching of Sakai of an automatic word class clustering algorithm is utilized to generate the word class information in order to provide a system is capable of adapting and improving itself, as described by Sakai (col. 6, line 53 - col. 7, line 5).

11. Claims 5-6, 10-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Second, as applied to Claim 1, above, and further in view of Li et al. ("Improving Latent Semantic Indexing Based Classifier With Information Gain"), hereafter Li.

As per Claim 5, Second fails to teach wherein the word information and word class information utilized is selected using information gain based term selection

Li teaches wherein the word information and word class information utilized is selected using information gain based term selection ("Information Gain in Term Selection... classification task", Section 2; "literal terms... may not match those of a relevant document", Section 1, paragraph 1; "IG enhanced... classified... categorize an unknown document", Section 3; where Li teaches an alternative classification method using information gain based term selection that includes defining/selecting categories [word class information] and terms [word information], and since disambiguation in

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general is a classification task [to determine whether a word should be given its meaning in one context or another] and so information gain based term selection can be used as a simple substitute to predictably perform the categorization/classification/disambiguation of a word in Second).

Therefore, it would have been obvious to one of ordinary skill in the art to perform a simple substitution of Second's disambiguation classification method with Li's information gain based term classification method, because Li's classification and Second's disambiguation both categorize/classify text, and so one of ordinary skill in the art could have substituted one classification method for another to obtain a predictable result of classified text.

As per Claim 6, Second fails to teach wherein the information gain based term selection determines an information gain value for each of a plurality of terms, the information gain value being indicative of entropy variations over a plurality of possible categories, and being determined as a function of a perplexity computation for an associated classification task.

Li teaches wherein the information gain based term selection determines an information gain value for each of a plurality of terms, the information gain value being indicative of entropy variations over a plurality of possible categories, and being determined as a function of a perplexity computation for an associated classification task ("significance of the term based on the entropy variations of the categories, which relates to the perplexity of the classification task", Section 2; "literal terms... may not

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match those of a relevant document”, Section 1, paragraph 1; “IG enhanced... classified... categorize an unknown document”, Section 3; where the entropy variations are taught by Li to relate to perplexity and so an entropy calculation is also a perplexity calculation and Equation 1 describes the information gain value being calculated from entropy/perplexity. Also the subscript  $t_i$  at the end of Section 2 at least suggests that there is more than one term for which the information gain is calculated).

Therefore, it would have been obvious to one of ordinary skill in the art to perform a simple substitution of Second's disambiguation classification method with Li's information gain based term classification method, because Li's classification and Second's disambiguation both categorize/classify text, and so one of ordinary skill in the art could have substituted one classification method for another to obtain a predictable result of classified text.

As per Claim 10, Second teaches a method, comprising receiving a communication that comprises at least one word (“input text... word that has more than one sense”, col. 6, lines 32-41; where the text containing the words is a communication and the words themselves are “communications comprising at least one word” because they communicate meaning themselves)

classifying the communication by utilizing a joint classifier based on word information and word class information (“disambiguate a word”, col. 6, lines 29-32; “input text... includes semantically ambiguous word... rule that is applicable to words that occur in a context designated ‘X’... applicable to words that occur in context ‘Y’”,

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col. 6, lines 32-41; "context information can be obtained... context in which word occurs in input text", col. 6, lines 42-48; "disambiguate... selecting one sense that applies to the instance of the word", col. 5, lines 59-67; "sense... distinct meanings", col. 5, lines 49-52; See Response to Arguments, where the disambiguation [joint classification] is performed by combining information about what the multi-sense ambiguous word is [word information] and the different context rules/information [word class information, where the words that occur in a context X are a class/set of words occurring in the context X] that narrow the number of senses/meanings of the ambiguous word [word information] to the meaning in the specific context [word class information] using the word itself [word information] and the rule [word class information].)

Second fails to teach wherein the combination of word information and word class information comprises at least one term-category matrix characterizing words and word classes selected using information gain based term selection.

Li teaches wherein the combination of word information and word class information comprises at least one term-category matrix characterizing words and word classes selected using information gain based term selection ("Information Gain Based LSI... term-document matrix... term is mapped to a unique row... category is mapped to a unique column", Section 3; "IG score", Section 2; where the term-document matrix has dimensions of terms and categories and the LSI is a classifier, and, as discussed above, disambiguation [in Second] is also a classification process for words into their correct meanings, and so the classification in Li can be substituted for Second's disambiguation classification)

Therefore, it would have been obvious to one of ordinary skill in the art to perform a simple substitution of Second's disambiguation classification method with Li's information gain based term classification method which includes a term-document matrix, because Li's classification and Second's disambiguation both categorize/classify text, and so one of ordinary skill in the art could have substituted one classification method for another to obtain a predictable result of classified text.

As per Claim 11, Second fails to teach wherein a cell  $i, j$ , of the term-category matrix comprises information indicative of a relationship involving an  $i$ -th selected term and a  $j$ -th category.

Li teaches wherein a cell  $i, j$ , of the term-category matrix comprises information indicative of a relationship involving an  $i$ -th selected term and a  $j$ -th category ("M[i,j] cell of the term-document matrix...  $i$ -th term occurs in the  $j$ -th category", Section 3; where the occurrence count is a relationship between the term and a category).

Therefore, it would have been obvious to one of ordinary skill in the art to perform a simple substitution of Second's disambiguation classification method with Li's information gain based term classification method which includes a term-document matrix, because Li's classification and Second's disambiguation both categorize/classify text, and so one of ordinary skill in the art could have substituted one classification method for another to obtain a predictable result of classified text.

As per Claim 12, Second teaches a method, comprising receiving a communication that comprises at least one word ("input text... word that has more than one sense", col. 6, lines 32-41; where the text containing the words is a communication and the words themselves are "communications comprising at least one word" because they communicate meaning themselves)

classifying the communication by utilizing a joint classifier to determine a category for the communication based on word information and word class information ("disambiguate a word", col. 6, lines 29-32; "input text... includes semantically ambiguous word... rule that is applicable to words that occur in a context designated 'X'... applicable to words that occur in context 'Y'", col. 6, lines 32-41; "context information can be obtained... context in which word occurs in input text", col. 6, lines 42-48; "disambiguate... selecting one sense that applies to the instance of the word", col. 5, lines 59-67; "sense... distinct meanings", col. 5, lines 49-52; See Response to Arguments, where the disambiguation [joint classification] is performed by combining information about what the multi-sense ambiguous word is [word information] and the different context rules/information [word class information, where the words that occur in a context X are a class/set of words occurring in the context X] that narrow the number of senses/meanings of the ambiguous word [word information] to the meaning in the specific context [word class information] using the word itself [word information] and the rule [word class information].)

Second fails to teach performing information gain based term selection, i) calculating information gain values for each word in the received communication, a

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given one of the terms comprising a word or a word class, ii) sorting the terms by their information gain values in a descending order, iii) sets a threshold as the information gain value corresponding to a specified percentile, and iv) selects the terms having an information gain value greater than or equal to the threshold.

Li teaches performing information gain based term selection (“Information Gain Based LSI Algorithm”, Section 3),

i) calculating information gain values for each word in the received communication, a given one of terms comprising a word or a word class (“terms are selected and used... according to IG criterion... sort the terms”, Section 3; “terms in documents”, Section 1, paragraph 1; where sorting terms by their IG values means that each term had its IG value calculated such that they can be sorted, and the terms are in documents that communicate information [received at the input to the classification system], and documents contain words and so the terms in this context are words)

ii) sorting the terms by their information gain values in a descending order (“sort the terms by their IG values in descending order”, Section 3)

iii) sets a threshold as the information gain value corresponding to a specified percentile, and (“select top p percentile of terms according to the IG score distribution”, Section 3; where taking the top p percentile sets the lowest of that p percentile as the threshold IG score)

iv) selects the terms having an information gain value greater than or equal to the threshold (“select top p percentile of terms”, Section 3; where taking the top p percentile takes all terms exceeding the lowest IG value in that percentile).

Therefore, it would have been obvious to one of ordinary skill in the art to perform a simple substitution of Segond's disambiguation classification method with Li's information gain based term classification method which includes calculating information gain values, sorting, setting a threshold and selecting terms greater than or equal to the threshold, because Li's classification and Segond's disambiguation both categorize/classify text, and so one of ordinary skill in the art could have substituted one classification method for another to obtain a predictable result of classified text.

As per Claim 13, Segond fails to teach wherein the selected terms are processed to form a term-category matrix utilizable by the joint classifier in determining one or more categories for the plurality of words.

Li teaches wherein the selected terms are processed to form a term-category matrix utilizable by the joint classifier in determining one or more categories for the plurality of words ("construct the term-document matrix... based on terms selected from... categorize... enhanced term-document matrix", Section 3).

Therefore, it would have been obvious to one of ordinary skill in the art to perform a simple substitution of Segond's disambiguation classification method with Li's information gain based term classification method constructing a term-document matrix from selected terms and classifying with the term-document matrix, because Li's classification and Segond's disambiguation both categorize/classify text, and so one of ordinary skill in the art could have substituted one classification method for another to obtain a predictable result of classified text.

As per Claim 14, Second fails to teach wherein the joint classifier comprises a joint latent semantic indexing classifier

Li teaches wherein the joint classifier comprises a joint latent semantic indexing classifier ("latent semantic indexing", Abstract; "conventional approach, the term-document matrix... additional module of IG", Section 3; where the "joint" classification uses a combination of term-document matrix and IG).

Therefore, it would have been obvious to one of ordinary skill in the art to perform a simple substitution of Second's disambiguation classification method with Li's joint LSI categorization/classification method, because Li's classification and Second's disambiguation both categorize/classify text, and so one of ordinary skill in the art could have substituted one classification method for another to obtain a predictable result of classified text.

12. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Second, as applied to Claim 1, above, and further in view of Mihalcea ("Bootstrapping Large Sense Tagged Corpora").

As per Claim 7, Second fails to teach wherein a plurality of terms is generated by appending a class corpus to a word corpus.

Mihalcea teaches wherein a plurality of terms is generated by appending a class corpus to a word corpus ("Word Sense Disambiguation [WSD] systems... start with a

set of seeds that are used to extract text snippets from the Web, which are then added to the sense tagged corpus to identify other instances of ambiguous words that can be accurately sense tagged... added to the set of seeds”, Section 1; “assigning the most appropriate meaning to a polysemous word within a given context”, Section 2; “Table 2 lists the starting seeds for channel... used to extract snippets from the Web... thousands of pages retrieved for each seed.... Corpus build using only the initial set of seeds consists of 393 examples... new seeds are employed to extract additional passages... appended to the set of examples”, Section 4; Tables 1-3; where in the example Table 2 forms a corpus [i.e., a collection of texts] for a set [i.e., a class] of words/senses corresponding to the word channel, and so it is a corpus for that “channel” class of senses [i.e., a class corpus] and the new snippets that are bootstrapped/appended to Table 2 to form Table 3 form another corpus [collection of texts] of words, and so constitute a word corpus).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to modify Second to include the teaching of Mihalcea of wherein a plurality of terms is generated by appending a class corpus to a word corpus, in order to expand available information useful for performing word sense disambiguation, as described by Mihalcea (Introduction).

13. Claims 8-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Second, as applied to Claim 1, above, and further in view of Ringger et al. (US 6,606,597), hereafter Ringger.

As per Claim 8, Second fails to teach wherein a plurality of terms is generated by joining sets of multiple words with corresponding sets of word classes.

Ringger teaches wherein a plurality of terms is generated by joining sets of multiple words with corresponding sets of word classes (“training corpus is a large body of text... augmented with a tag... noun ‘object’... indicating that it is a noun... verb ‘object’... indicating that it is a verb... indicating the definition of the word”, col. 9, line 55 – col. 10, line 9; where Second teaches rules used for determining meaning being derived on corpus information [col. 5, lines 13-15], and Ringger teaches augmenting a corpus with meaning-related information [part-of-speech], and so the combination teaches rules being derived from a corpus containing terms that are made of [multiple] words in the corpus tagged with their parts-of-speech [sets of word classes] as per Ringger)

Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to modify Second to include the teaching of Ringger of wherein a plurality of terms is generated by joining sets of multiple words with corresponding sets of word classes, in order to provide additional useful information pertaining to the different meanings of words, as described by Ringger (col. 9, line 55 – col. 10, line 9).

As per Claim 9, Second fails to teach wherein a plurality of terms is generated by interleaving individual words with their corresponding word classes.

Ringger teaches wherein a plurality of terms is generated by interleaving individual words with their corresponding word classes (“training corpus is a large body of text... augmented with a tag... noun ‘object’... indicating that it is a noun... verb ‘object’... indicating that it is a verb... indicating the definition of the word”, col. 9, line 55 – col. 10, line 9; “OBJECT/N”, col. 2, lines 3-5; where Segond teaches rules used for determining meaning being derived on corpus information [col. 5, lines 13-15], and Ringger teaches augmenting a corpus with meaning-related information [part-of-speech], and so the combination teaches rules being derived from a corpus containing terms that are made of [multiple] words in the corpus tagged with their parts-of-speech [sets of word classes] as per Ringger. Also, Ringer shows that the tag /N is inserted right next to its word OBJECT to form OBJECT/N and so this constitutes “interleaving” since is attaches the tag next to the word [applicant’s Specification, Figure 5])

Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to modify Segond to include the teaching of Ringger of wherein a plurality of terms is generated by interleaving individual words with their corresponding word classes, in order to provide additional useful information pertaining to the different meanings of words, as described by Ringger (col. 9, line 55 – col. 10, line 9).

### ***Conclusion***

14. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. See PTO-892.

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to ERIC YEN whose telephone number is (571)272-4249.

The examiner can normally be reached on M-F 7:30-4:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Richemond Dorvil can be reached on 571-272-7602. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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EY 10/19/09

/Eric Yen/

Examiner, Art Unit 2626